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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,305	07/14/2003	Yusuke Tamaki	35859	6316

116 7590 09/12/2005

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EXAMINER	
MENEFEE, JAMES A	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/619,305	TAMAKI ET AL.	
	Examiner	Art Unit	
	James A. Menefee	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The disclosure is objected to because of the following informalities: on page 12 lines 13 and 15, it appears that "320" should read "350" because that is the cooling holder of Fig. 5. Appropriate correction is required.

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: "155" on p. 1 line 19.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheps (US 5,682,397). See Fig. 1 and discussion thereof.

Regarding claim 1, Scheps discloses a laser oscillator comprising an excitation beam source 12 generating an excitation beam, a lasing medium 10 receiving the excitation beam for amplifying light, a laser oscillator (between reflecting face 10e and output mirror 15) to produce laser oscillation, and a cooling system 13 for cooling the cooling medium. The cooling system is disclosed as using helium at 6.7 K, and therefor the cooling system uses gas (applicant admits the evaporation temperature of helium is 4.7 K).

Regarding claim 2, as noted above the lasing medium is cooled to 6.7 K, which is less than the evaporation temperature of liquid nitrogen.

Regarding claim 4, as noted above helium is the heat carrying medium.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art ("APA", see Figs. 1-2) in view of Kuhn (US 4,563,763).

Regarding claim 1, APA discloses in Fig. 1 a laser oscillator comprising an excitation beam source generating an excitation beam 120, a lasing medium 110 receiving the excitation beam for amplifying light, a laser oscillator between the reflectors for inducing resonance of light emitted from the lasing medium to perform laser oscillation, and a cooling system 180 for cooling the lasing medium.

APA concerns liquid cooling media, therefore the gas cooling system is not disclosed. Kuhn teaches that liquid coolants may create problems with thermal lensing and coolant boiling off (i.e. similar problems as noted in the present specification) and goes on to describe a gas cooled laser. Col. 1 lines 30-44. It would have been obvious to one skilled in the art to utilize gas cooling for the laser in order to avoid those problems noted in Kuhn.

Regarding claim 4, Kuhn's gas coolant is helium.

Regarding claims 5-6, the cooling system may comprise a planar cooling holder 180 that supports the lasing medium on a top surface.

Regarding claims 7-8, APA shows in Fig. 2 that the cooling holder 220 may be made of copper and formed as a tube shape with openings on both ends.

Regarding claim 9, the lasing medium of APA may be Ti:sapphire. p. 2 line 8.

Regarding claim 10, it is not disclosed that the lasing medium is attached to the cooling holder. However, this is known in the art and it would have been obvious to do so because if the pieces are left loose then damage or misalignment from movement could easily occur. All of the names means of attachment are known adhesives. It would have been obvious to one skilled in the art to use any of these adhesives, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

Regarding claim 3, Scheps discloses the limitations of parent claim 1 as shown above, but does not disclose that the helium cryostat is a Gifford-McMahon (GM) refrigerator. The GM refrigerator is well known in the refrigeration art for cooling helium to low temperatures and was first taught by McMahon. As Scheps does not supply any details of the means for cooling the hydrogen, it would have been obvious to one skilled in the art to use a GM refrigerator because it is capable of cooling helium to low temperatures while avoiding the use of various valves and sealing rings, as taught by McMahon. See col. 2 lines 8-14, col. 1 line 38-48.

Conclusion

Other references show that helium gas is used for cooling a laser. See, e.g., Trost (4,789,988), Sekiguchi (US 5,034,953).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James Menefee
September 5, 2005